Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

Zoological News.—According to F. Neri,[7] who has been studying the beaks of cephalopods, these structures are composed of fibrous cuticular laminæ, which chemically are not chitinans but keratinous. The upper part is encrusted with lime.

The results of the Austrian deep sea expeditions of 1890–4 show, according to Dr. R. Sturany,[8] that the eastern portions of the Mediterranean is much poorer in deep sea shells than the western basin, and further, that the fauna is doubtless of Atlantic origin.

ENTOMOLOGY.[1]

The American Spring-tail.—This very anomalous little insect (*Lepidocyrtus americanus* Marlatt) measuring scarcely more than one-tenth of an inch, silvery gray in color, with purple or violet markings, may be frequently observed in houses. In common with the silver fish, it belongs to the order of insects known as Aptera (wingless), from the fact of their having no vestige of wings throughout life.

The simple structure of these insects, and particularly their resemblance to the larval state of winged insects, has led to the belief that they are the primitive forms of insect life. That this is true is, however, by no means certain, and they may rather be degraded or debased examples of some of the higher orders of insects. The species figured herewith is not infrequently found in dwellings in Washington, but is apparently undescribed, and, in fact, little is known of the American species. It is, however, closely allied to a European form (*L. cervicalis*), often found in cellars, and figured by Sir John Lubbock in his monograph on these insects. Another allied European species (*Seira domestica*) has been named from the fact of its being a frequenter of houses.

These insects belong to the suborder Collembola, which (following Sharp) is distinguished from the other suborder of Aptera, Thysanura, by having but five body segments instead of ten, and possessing a very peculiar ventral tube on the first segment, and commonly also a terminal spring, by means of which these creatures leap with great agility, and from which they take their common name of "spring-tails."

---

[7] Atti Soc. Tasc. Sci, Nat., x (1896), J. R. M. S., p. 401.

[8] S. B. K. Akad. Wiss. Wein., 1896. J. R. M. S., p. 400.

[1] Edited by Clarence M. Weed, New Hampshire College, Durham, N. H.

These insects, though very abundant, have been very little studied, and little is known of their life habits. They often multiply in extraordinary numbers, especially in moist situations, swarming on the surface of stagnant water or on wet soil. They seem to be very tolerant of cold, and we have interesting accounts of the occurrence of a species related to this one in the Arctic regions on melting snow fields and on glaciers, where they are known as "snow fleas" or "snow worms." Other interesting forms occur in caves, and in the Mammoth Cave in Kentucky they are notably abundant. In houses they may often be found on window sills, in bathrooms, and sometimes, under favorable situations, in very considerable numbers. Especially are they apt to occur where there are window plants or in small conservatories, but are not confined to these situations. Very little is known of their food habits, but they are supposed to subsist on refuse or chiefly decaying vegetable matter.

The striking peculiarities of these insects are in the remarkable ventral tube and the strong saltatorial appendage of the extremity of the body. The first arises from the forward body segment, and seems to act in this species as a sort of a retainer for the leaping organ, or spring proper. It is said to secrete a viscid fluid, which enables the insect to better adhere to smooth vertical surfaces. The so-called "catch," or retainer proper, is shown in a small projection between the hind pair of legs and the spring, and grasps the latter near the middle. The springing organ is two-jointed, the last joint being bifurcate, and its terminals inclosing the ventral tube.

These insects can not survive dryness, and, while they will not often occur in sufficient numbers to be particularly objectionable, the removal of the moist objects or surfaces on which they congregate and the maintenance of dry conditions will cause them to soon disappear.—C. L. MARLATT *in Bulletin, No. 4, U. S. Division of Entomology.*

Sphinx Caterpillar Surviving Ichneumon Attack.—Rev. T. A. Marshall records[2] an interesting case of this kind. A caterpillar of *Acherontia atropos* had been 'forced' by artificial warmth to an early development of the moth. The latter was a perfect specimen ; in its abdomen was found a large Ichneumonid larva. "From the caterpillar point of view we have here only an instance of tenacity of life under trying circumstances. * * * In the normal course of things the death of the Atropos larva after its change to a chrysalis, and the production of a living ichneumon, would inevitably have taken place sometime next spring. But the development of the chrysalis having been artificially hastened, the parasite had no time to cause its death, and the exhaustion of vital juices was not sufficient to prevent the final metamorphosis. Hence the phenomenon of a half-grown parasite being found in the body of a perfect moth.

---

[2] Ent. Monthly Mag. Dec., 1896.

"The eventual death of the moth from the action of the parasite is probable, but not quite certain. It would seem to depend upon two doubtful questions: (1) What is the natural duration of the life of an Atropos? and (2) Would the robust constitution of which proof has already been given, enable it to hold out till the parasite had escaped from its body? The single perforation of the cuticle necessary to permit the issue of the ichneumon might not be mortal in its effects. The fatal result in other cases is believed to depend partly upon the breaking up of the tracheal system by numerous perforations, and partly upon exhaustion of the vital forces. The moth in question would only be subject to the first of these injuries in a very mild degree; and its great bulk and strength might enable it, as heretofore, to defy the second. It seems, therefore, not unreasonable to suppose that, if left to nature, it would ultimately have recovered."

A Viviparous Ephemerid.—M. Causard records[3] the following interesting observations the Ephemerid *Chlœopsis diptera* Latr. "This species is very common in houses at the end of summer and the commencement of autumn, when these insect attach themselves to the windows or the ceilings, and there rest immovable, their two wings turned back, and applied one against the other, the posterior part of the abdomen terminated by two long filaments, turned back upon the dorsal aspect. The same insect may be observed in the same place for several days. Having captured a large number of them, I have been able to keep them for more than three weeks before they laid their eggs. I have found it impossible to fix exactly the duration of their existence, because at the time of capture I did not know how long they had emerged from the nymph state. However, that may be, there are Ephemeræ which have but little title to the name. This relatively long existence in the adult state is in accord with their processes of reproduction.

"Desiring one day to study the circulation of the blood in one of these insects, in the living state, which I supposed to be sufficiently transparent for the purpose, I took one of them and placed it between two plates of hollowed glass. The pressure of these plates caused a

---

[3] Comptes Rendus, CXXIII, 705; Ann. and Mag. Nat. Hist., v, 18, p. 481.

quantity of greyish matter to exude from the abdomen of the animal; I regarded the insect as dead and my observation a failure. Nevertheless, on examination with the microscope, I observed that the extruded matter was formed of a large number of little ovoid bodies, which immediately began to move about and unroll themselves. Each of them was a little larva, which was very active and began to swim about. Were these Ephemeræ viviparous? This was the question that I at once asked myself. Then I examined the contents of a large number of individuals, and I found eggs in every stage of development; in some the segmentation was but slightly advanced, but a commencement of evolution was very distinct; in others, the extruded larvæ showed segmentation; the most advanced enclosed completely developed larvæ, but still enclosed in the transparent membrane of the egg. I have since been able to observe the females emitting their larvæ freely with out any pressure, so that their viviparity is a proven fact. When the moment approaches that the insects seek the water, they allow themselves to fall into it and float on the surface, with their wings extended, up to the moment at which the larvæ are extruded. During this operation, which lasts for a very short time, the whole of the last three segments of the abdomen are lifted upwards so as to form almost a right angle with the rest of the body. The larvæ are expelled by a double orifice pierced between the seventh and the eighth abdominal rings; these two openings are only separated from one another by a very slight portion of tissue, and generally break into one another so as to become one after the deposition of the egg. There results a large slit which involves the whole of the lower half of the line of junction of these two rings. In this case the digestive tube is burst so that the nerves are detached behind the last nervous ganglion which occupies the seventh abdominal ring. These observations led me to study the female genital apparatus, which ought to be constructed with a view to the internal development of the eggs. Almost the whole of the body of the female is occupied by two sacs attached, the one to the other, along the middle line; the vertical partition which separates them is traversed by numerous tracheæ. These sacs extend over the whole abdomen, with the exception of the last two segments, and reach as far as the head, occupying in the three thoracic rings almost the whole of the space left free by the muscles of the wings and legs. Beneath them is the digestive tube, reduced to a canal with a thin and delicate wall and the nervous chain. These two sacs open on the outside, each by a distinct orifice pierced in the membrane which joins the seventh abdominal ring to the eighth, and, as already described, at the moment of the exit of the larvæ these two openings run together to form one. To what part of genital apparatus of other insects does this double incubation sac correspond? I have not yet been able to settle this point, in as much as I have only had under observation insects in which the sacs were already filled with eggs in course of development, and in which the empty and shrivelled ovaries were with difficulty visible. In spite of the relatively long duration of their life, the Chlœopses takes no more food in the adult state than the other Ephemeræ. Their mouth is only armed with a few soft and incomplete parts.

" The larvæ are elongated, very active, armed with feet terminated by a single hook. The head, roughly pentagonal in form, bears two long antennæ and five ocular spots of which one, odd, is situated between the bases of the antennæ; the four others are arranged in two pairs, of which the posterior furnishes the reticulated eyes of the adult. The mouth is provided with a masticatory apparatus, which is well formed. The abdomen is formed of ten segments, of which the last bears two long filaments provided with a few stiff hairs. The length of the body is 0.7 millim., not including the caudal filaments, which are at least as long as the body. The cephalo thorax and the anterior part of the abdomen contain at birth brilliant globules, which disappear in a day or two. During the first period of their existenee the larvæ have neither tracheæ nor tracheal branchiæ. Six days after their birth the larvæ undergo a first change; their appearance changes but little, but on each of the 2nd, 3rd, 4th, 5th and 6th abdominal rings there appears a pair of short prominences, each as much developed as the others, the rudiments of the future tracheo-branchiæ. Three days later there is another change; the five prominences just mentioned become elongated, and a pair of them appear on the first abdominal ring, the tracheæ also become visible. After the third change, the five pairs of tracheo-branchiæ are well formed and receive the tracheæ. Those of the first ring do not develop completely until the fourth change, and, finally, those of the seventh abdominal ring, apparent at the third change, are not complete till after the fifth. From that time the larva possesses all its organs."

EMBRYOLOGY.[1]

The Corpus Luteum.—The fate of the Graafian follicle of the Mammal's ovary is certainly very remarkable. The well known corpus

---

[1] Edited by E. A. Andrews, Baltimore, Md., to whom abstracts reviews and preliminary notes may be sent.